OIPE JC19 OCT 13 2004 PATENT & TRADEMARK OFFICE

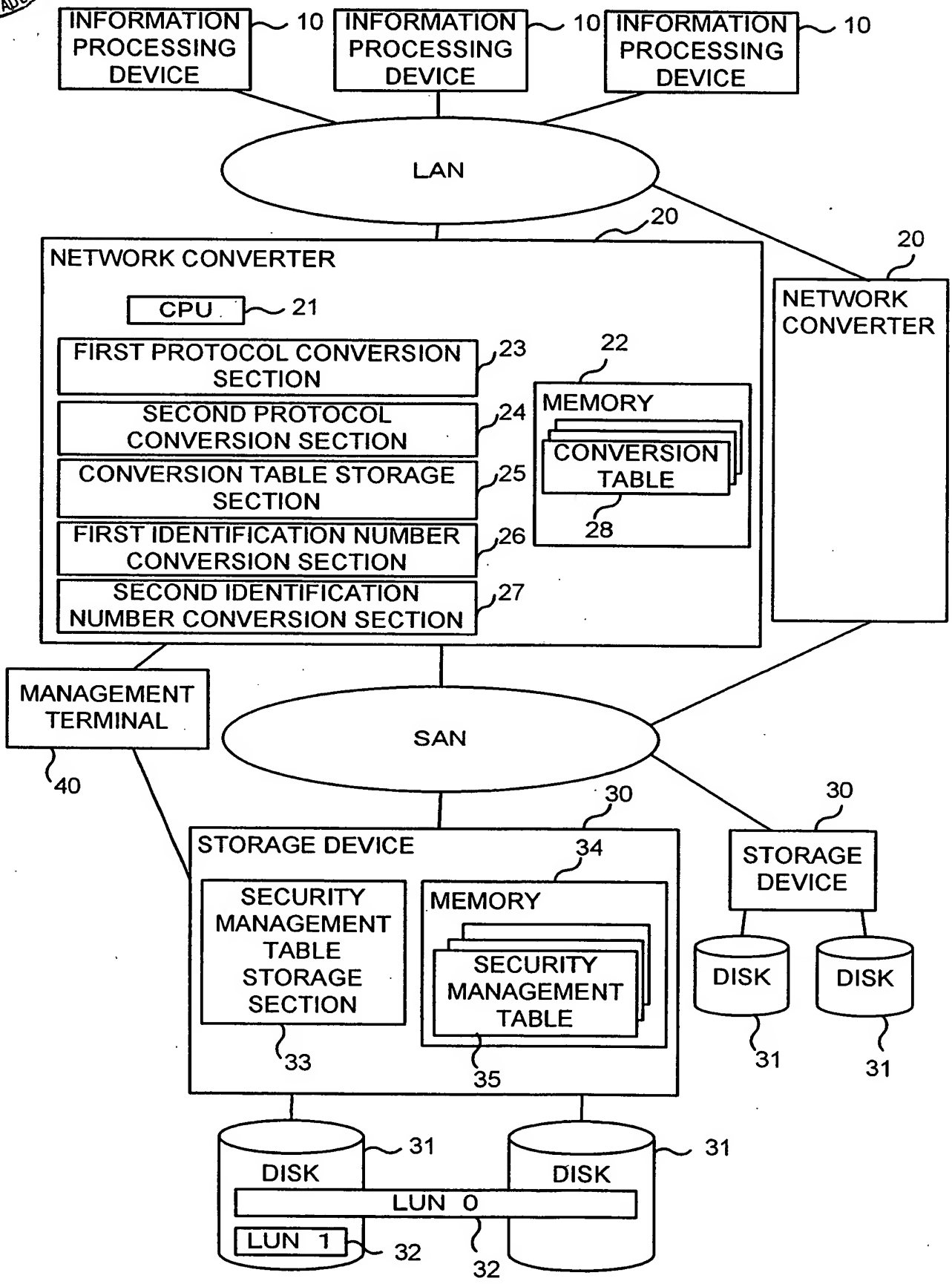

Fig. 1

iSCSI NAME	Node_Name(WWN)	N_Port_Name(WWN)
INFORMATION PROCESSING DEVICE #1	01020304	0101ABCD
INFORMATION PROCESSING DEVICE #2	030A0B0C	0201EF01
⋮	⋮	⋮
STORAGE DEVICE #1	0A010203	0A020100
⋮	⋮	⋮
default	FFFFFFFF (ACCESS DISABLED)	FFFFFFFF (ACCESS DISABLED)

27

Fig. 2

Node_Name(WWN)	N_Port_Name(WWN)	LUN0	LUN1	···	LUNn
01020304	0101ABCD	1	0	···	0
030A0B0C	0201EF01	0	1	···	1
⋮	⋮	⋮	⋮	···	⋮
FFFFFFFF (ACCESS DISABLED)	FFFFFFFF (ACCESS DISABLED)	0	0	···	0

35

Fig. 3

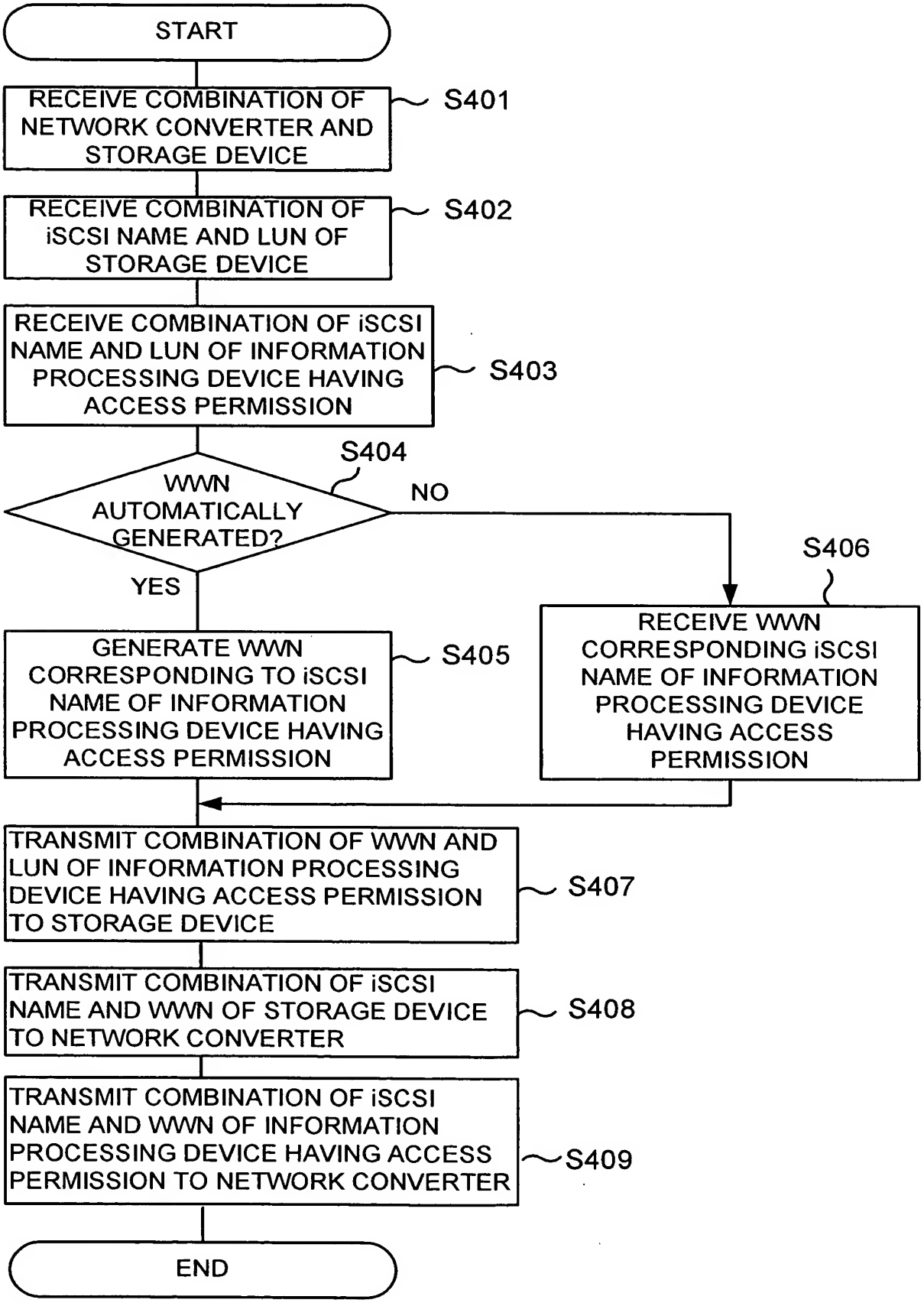
START
RECEIVE COMBINATION OF NETWORK CONVERTER AND STORAGE DEVICE
S401
RECEIVE COMBINATION OF iSCSI NAME AND LUN OF STORAGE DEVICE
S402
RECEIVE COMBINATION OF iSCSI NAME AND LUN OF INFORMATION PROCESSING DEVICE HAVING ACCESS PERMISSION
S403
S404
WWN AUTOMATICALLY GENERATED?
NO
YES
S406
RECEIVE WWN CORRESPONDING iSCSI NAME OF INFORMATION PROCESSING DEVICE HAVING ACCESS PERMISSION
GENERATE WWN CORRESPONDING TO iSCSI NAME OF INFORMATION PROCESSING DEVICE HAVING ACCESS PERMISSION
S405
TRANSMIT COMBINATION OF WWN AND LUN OF INFORMATION PROCESSING DEVICE HAVING ACCESS PERMISSION TO STORAGE DEVICE
S407
TRANSMIT COMBINATION OF iSCSI NAME AND WWN OF STORAGE DEVICE TO NETWORK CONVERTER
S408
TRANSMIT COMBINATION OF iSCSI NAME AND WWN OF INFORMATION PROCESSING DEVICE HAVING ACCESS PERMISSION TO NETWORK CONVERTER
S409
END

Fig. 4

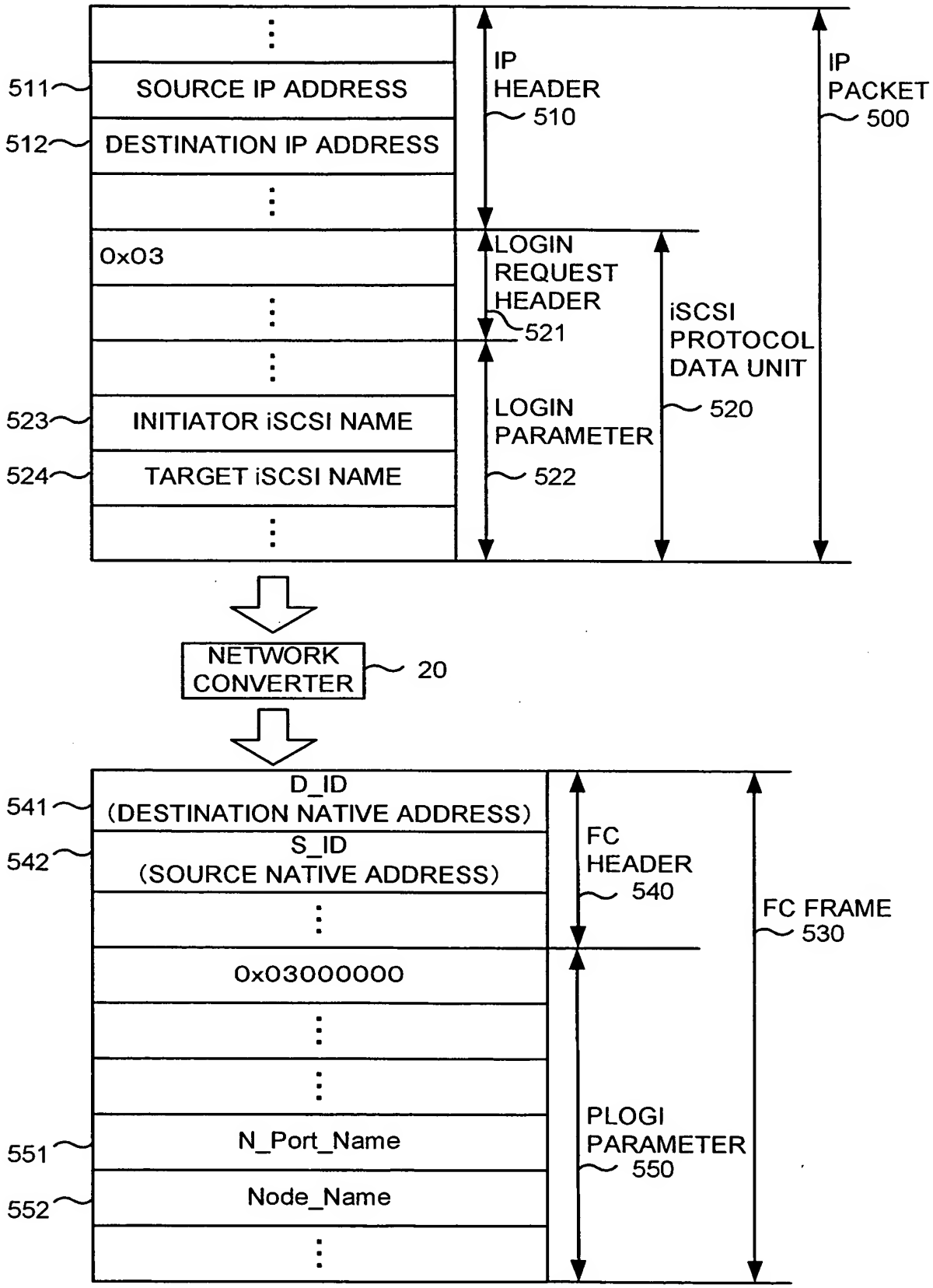
SOURCE IP ADDRESS
DESTINATION IP ADDRESS
0x03
INITIATOR iSCSI NAME
TARGET iSCSI NAME
511
512
523
524
IP HEADER 510
IP PACKET 500
LOGIN REQUEST HEADER 521
iSCSI PROTOCOL DATA UNIT 520
LOGIN PARAMETER 522
NETWORK CONVERTER 20
D_ID (DESTINATION NATIVE ADDRESS)
S_ID (SOURCE NATIVE ADDRESS)
0x03000000
N_Port_Name
Node_Name
541
542
551
552
FC HEADER 540
FC FRAME 530
PLOGI PARAMETER 550

Fig. 5

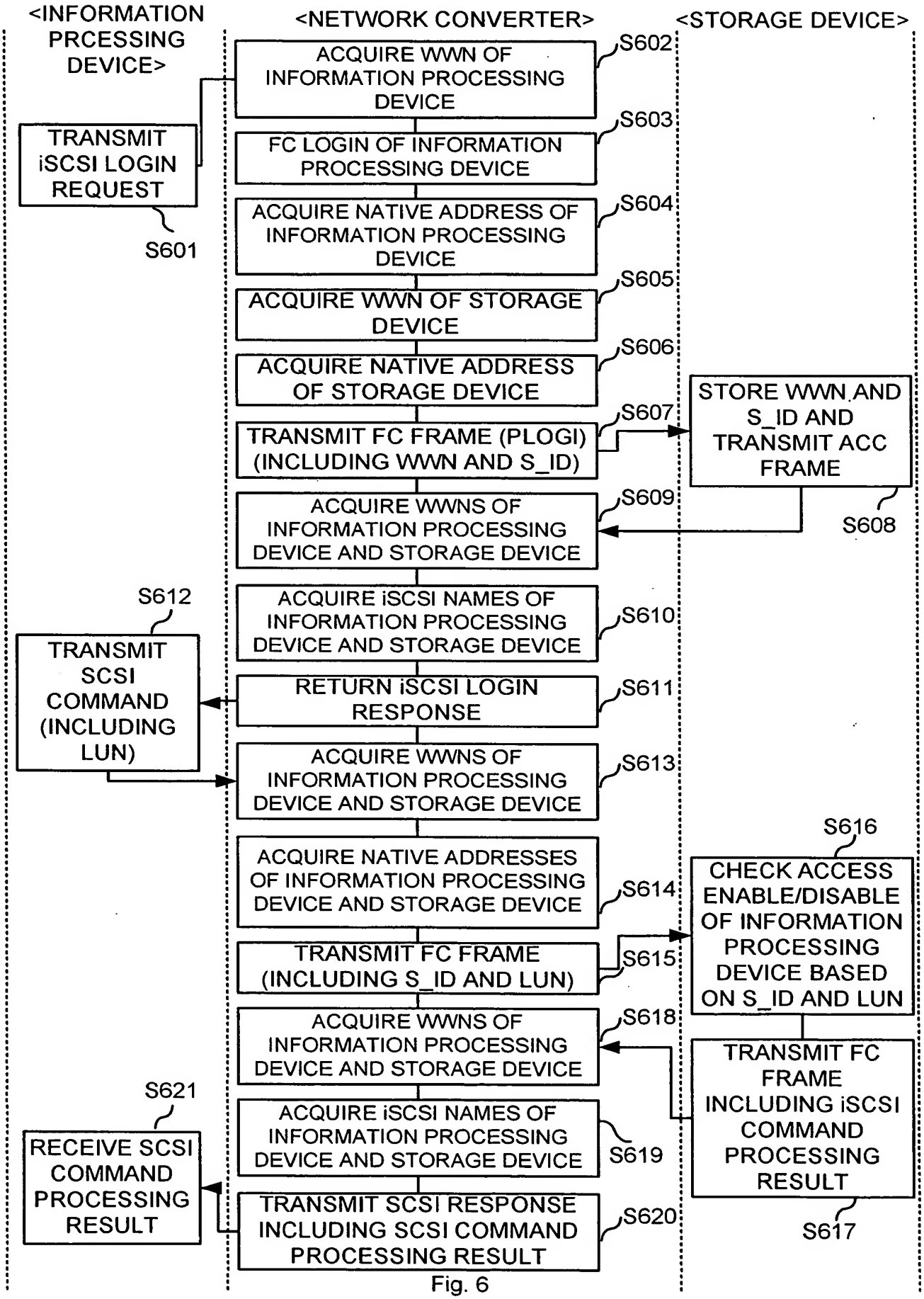
<INFORMATION PRCESSING DEVICE>
<NETWORK CONVERTER>
<STORAGE DEVICE>
ACQUIRE WWN OF INFORMATION PROCESSING DEVICE
S602
TRANSMIT iSCSI LOGIN REQUEST
S601
FC LOGIN OF INFORMATION PROCESSING DEVICE
S603
ACQUIRE NATIVE ADDRESS OF INFORMATION PROCESSING DEVICE
S604
ACQUIRE WWN OF STORAGE DEVICE
S605
ACQUIRE NATIVE ADDRESS OF STORAGE DEVICE
S606
TRANSMIT FC FRAME (PLOGI) (INCLUDING WWN AND S_ID)
S607
STORE WWN AND S_ID AND TRANSMIT ACC FRAME
S608
ACQUIRE WWNS OF INFORMATION PROCESSING DEVICE AND STORAGE DEVICE
S609
ACQUIRE iSCSI NAMES OF INFORMATION PROCESSING DEVICE AND STORAGE DEVICE
S610
RETURN iSCSI LOGIN RESPONSE
S611
TRANSMIT SCSI COMMAND (INCLUDING LUN)
S612
ACQUIRE WWNS OF INFORMATION PROCESSING DEVICE AND STORAGE DEVICE
S613
ACQUIRE NATIVE ADDRESSES OF INFORMATION PROCESSING DEVICE AND STORAGE DEVICE
S614
TRANSMIT FC FRAME (INCLUDING S_ID AND LUN)
S615
CHECK ACCESS ENABLE/DISABLE OF INFORMATION PROCESSING DEVICE BASED ON S_ID AND LUN
S616
ACQUIRE WWNS OF INFORMATION PROCESSING DEVICE AND STORAGE DEVICE
S618
TRANSMIT FC FRAME INCLUDING iSCSI COMMAND PROCESSING RESULT
S617
ACQUIRE iSCSI NAMES OF INFORMATION PROCESSING DEVICE AND STORAGE DEVICE
S619
RECEIVE SCSI COMMAND PROCESSING RESULT
S621
TRANSMIT SCSI RESPONSE INCLUDING SCSI COMMAND PROCESSING RESULT
S620

Fig. 6

NATIVE ADDRESS	Node_Name(WWN)	N_Port_Name(WWN)
0001	01020304	0101ABCD
0002	030A0B0C	0201EF01
⋮	⋮	⋮
0005	FFFFFFFF	FFFFFFFF

701

Fig. 7

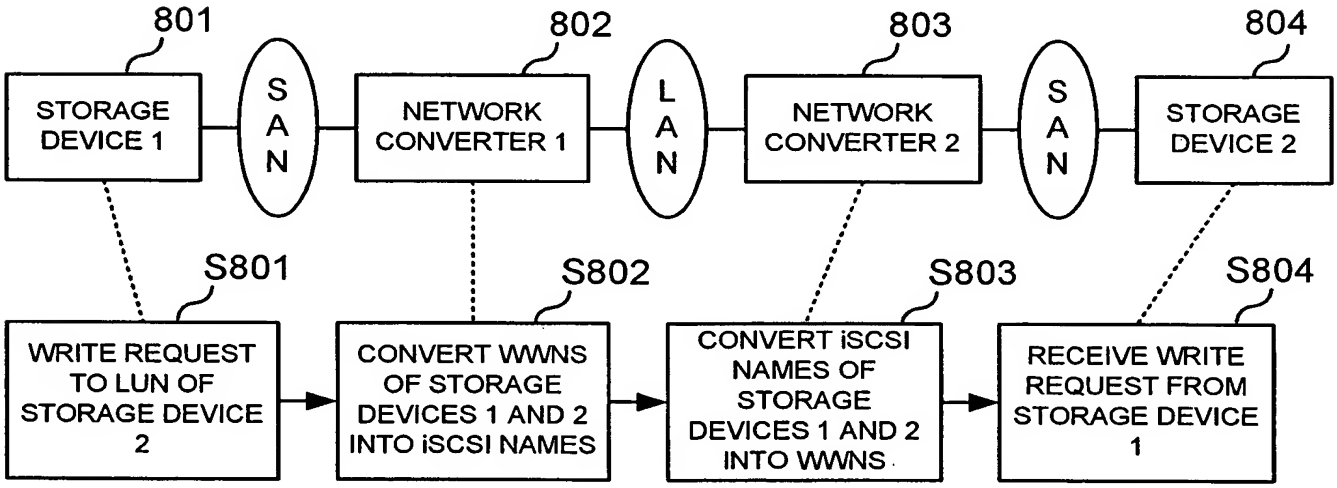

Fig. 8

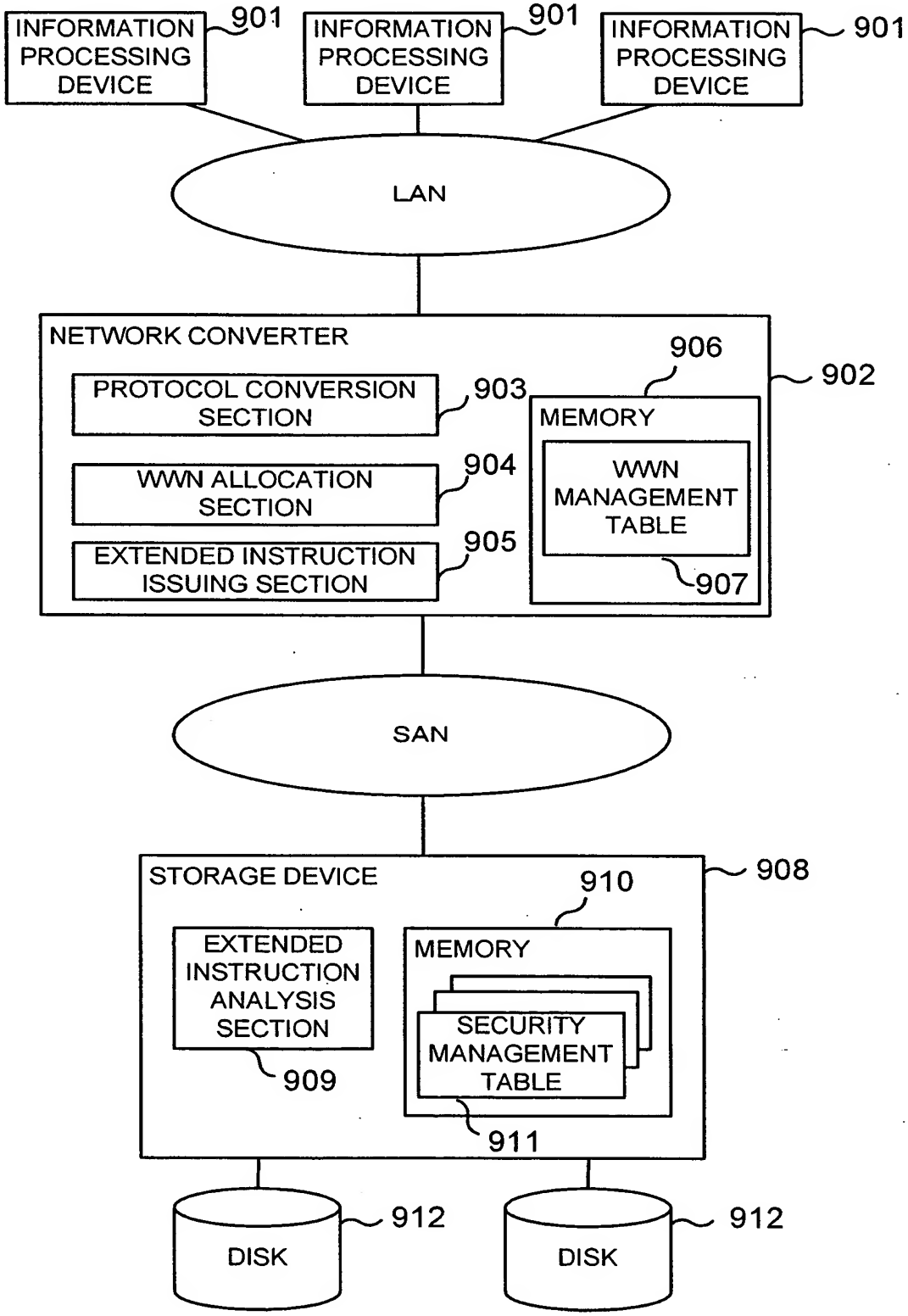
INFORMATION PROCESSING DEVICE
901
INFORMATION PROCESSING DEVICE
901
INFORMATION PROCESSING DEVICE
901
LAN
NETWORK CONVERTER
906
902
PROTOCOL CONVERSION SECTION
903
MEMORY
WWN ALLOCATION SECTION
904
WWN MANAGEMENT TABLE
EXTENDED INSTRUCTION ISSUING SECTION
905
907
SAN
STORAGE DEVICE
910
908
EXTENDED INSTRUCTION ANALYSIS SECTION
MEMORY
SECURITY MANAGEMENT TABLE
909
911
DISK
912
DISK
912

Fig. 9